

SOKOLOV, Yu.D.

Brief essay on the life and scientific activities of Joseph
Louis Lagrange; on the 225th anniversary of his birth. Ukr.mat.
zhur. 13 no.2:127-135 '61. (MIRA 14:8)
(Lagrange, Joseph Louis, 1736-1813)

MITROPOL'SKIY, Yu.A. (Kiyev); PARASYUK, O.S. (Kiyev); SOKOLOV, Yu.D.
(Kiyev)

"Operational methods and their development in the theory of
linear differential equations with variable coefficients" by
Y.Z. Shtokalo. Reviewed by IU.A. Mitropolskii, O.S. Parasiuk,
IU.D. Sokolov. Ukr. mat. zhur. 13 no.3:114-117 '61. (MIRA 14:9)
(Calculus, Operational) (Differential equations, Linear)
(Shtokalo, Y.Z.)

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S/041/61/013/004/003/007
B125/B112

AUTHOR: Sokolov, Yu. D.

TITLE: A method for the approximate solution of systems of linear differential equations

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, v. 13, no. 4, 1961, 79-87

TEXT: A system of linear differential equations of second kind of the type

$$y_i(x) = \varphi_i(x) + \lambda \sum_{j=1}^m \int_a^b K_{ij}(x, \xi) y_j(\xi) d\xi \quad (i=1, 2, \dots, m), (b-a=h>0). \quad (1)$$

was examined. The kernels $K_{ij}(x, \xi)$ have to satisfy one of the following conditions: (1) The function $K_{ij}(x, \xi)$ is a kernel of first kind which is "continuous almost everywhere". $K_{ij}(x, \xi)$ is a polar kernel having the form $K_{ij}(x, \xi) = \bar{K}_{ij}(x, \xi)/|x - \xi|^{\beta_{ij}}$. $0 < \beta_{ij} < 1$, and the function $K_{ij}(x, \xi)$ is continuous for $a \leq x \leq b$, $a \leq \xi \leq b$. (1) has to be solved by the approximations

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A method for the approximate ...

$$y_{in}(x) = \varphi_i(x) + \lambda \sum_l \int_a^b K_{il}(x, \xi) [y_{l,n-1}(\xi) + \alpha_{ln}] d\xi = \quad (2_n)$$

$$= \varphi_i(x) + \lambda \sum_l \int_a^b K_{il}(x, \xi) y_{l,n-1}(\xi) d\xi + \lambda h \sum_l \alpha_{ln} M_{il}(x),$$

$$\alpha_{in} = \frac{1}{h} \int_a^b \delta_{in}(x) dx [\delta_{in}(x) = y_{in}(x) - y_{i,n-1}(x); \delta_{in}(x) = y_{in}(x); n=2, 3, \dots] \quad (4_n).$$

If, at $a \leq x \leq b$, $a \leq \xi \leq b$, the kernels $K_{ij}(x, \xi)$ are integrable over both arguments together with their absolute values, the sufficient condition for the convergence of the process reads:

$$\varepsilon = l \left[L + (1 + lL) \frac{N}{|D|} \right] < 1 \quad (l = |\lambda|), \quad (11),$$

where

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A method for the approximate ...

$$\sum_l L_{lj} \text{ и } \sum_i |D_{ij}| \sum_p N_{ip} \quad (i, j = 1, 2, \dots, m),$$

$$L_{lj} = \sup_{a < x < b} \int_a^b |K_{lj}(x, \xi)| d\xi, \quad N_{ip} = \frac{1}{h} \int_a^b \left| \int_a^b K_{ij}(x, \xi) dx \right| d\xi. \quad (12).$$

L and N are the minimal values of the sums. The condition of A. Yu. Luchka holds in the case of the system (1). The sufficient condition for the algorithm which is analogous to Yu. D. Sokolov's (YMZh, t. X, 4, 1958) equation is determined. A system of two linear integral equations is treated as an example by the method of successive approximations. There are 1 table and 3 Soviet references. ✓

SUBMITTED: December 20, 1960 (Kiyev)

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LUCHKA, Anton Yur'yevich; SOKOLOV, Yu.D., .otv. red.; MEL'NIK, T.S.,
red.; TURBANOVA, N.A., tekhn. red.

[Theory and application of the method of averaging of
functional corrections] Teoriia i primeneniie metoda os-
redneniia funktsional'nykh popravok. Kiev, Izd-vo AN
USSR, 1963. 125 p. (MIRA 17:3)

1. Akademiya nauk Ukr.SSR (for Sokolov).

M. ITROPOL'SKIY Yu.A., otv. red.; BEREZANSKIY, Yu.M., red.; KOROLYUK, V.S., red.; PARASYUK, O.S., red.; SOKOLOV, Yu.D., red.; FESHCHENKO, F.F., red.; FIL'CHAKOV, P.F., red.; BREUS, K.A., red.; MEL'NIK, T.S., red.; BEREZOVSKAYA, D.N., tekhn. red.

[Approximate methods of solution of differential equations]
Priblizhennyye metody resheniya differentsial'nykh uravnenii.
Kiev, Izd-vo AN USSR, 1963. 153 p. (MIRA 17:3)

1. Akademiya nauk UKSR, Kiev. Instytut matematyky.

S/041/63/015/001/004/009
B187/B102

AUTHOR: Sokolov, Yu. D. (Kiyev)

TITLE: Approximation method for the solution to systems of nonlinear integral equations with constant boundaries

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, v. 15, no. 1, 1963, 58-70

TEXT: The solution method of averaging functional corrections as developed by the author in UMZh, v. 13, no. 4, 1961 is used for solving nonlinear equations of the form

(1)

φ_i and f_i are functions continuous in $[a, b]$ of their arguments and satisfy the Lipschitz conditions with respect to y in a wide range. The kernels $K_i(x, \xi)$ are assumed either to be bound kernels of the first kind (almost everywhere continuous) or that $K_i(x, \xi) = \frac{\bar{K}_i(x, \xi)}{|x - \xi|^{p_i}}$ with continuous \bar{K}_i and

(4₁) is

$0 < p_i < 1$.

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$$y_n(x) = \varphi_i(x) + \int_a^b K_i(x, \xi) f_i(x, \xi, a_{11}, a_{21}, \dots, a_{m1}) d\xi,$$

SOKOLOV, Yu.D.

Reviews and bibliography. Prikl. mekh. 1 no.9:137-138 '65.
(MIRA 18:10)

L 53767-65 EWT(d) IJP(c)

ACCESSION NR: AP5014864

UR/0041/65/017/003/0091/0103

AUTHOR: Sokolov, Yu. D. (Kiev)

TITLE: Sufficient conditions of convergence of the method of averaging of functional errors

SOURCE: Ukrainskiy matematicheskii zhurnal, v. 17, no. 3, 1965, 91-103

TOPIC TAGS: integral equation, approximation calculation

ABSTRACT: The author considers the nonlinear integral equation

$$y(x) = \varphi(x) + \int_a^b K(x, \xi) f(x, \xi, y(\xi)) d\xi \quad (b-a=h>0), \quad (1)$$

and systems of such equations, where $\varphi(x)$ and $f(x, \xi, y)$ are continuous in a region (0) defined by

$$a < x < b; \quad a < \xi < b; \quad m < y < M, \quad (2)$$

and $K(x, \xi)$ is a bounded kernel of the first kind, a.e., continuous, or a polar kernel of the form

$$K(x, \xi) = \frac{\bar{K}(x, \xi)}{|x - \xi|^q}.$$

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ACCESSION NR: AP5014864

where $0 < \rho < 1$, and $\bar{K}(x, \xi)$ is continuous for $a < x < b$; $a < \xi < b$. He establishes a series of sufficient conditions for convergence of the method of averaging of functional errors, applying this to approximate solution of (1), (2). Orig. art. has: 29 formulas.

ASSOCIATION: none

SUBMITTED: 24Nov64

ENCL: 00

SUB CODE: MA

NO REF SOV: 010

OTHER: 000

Card 2/2

SOV/58-59-7-16214

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 227 (USSR)

AUTHORS: Rusin, F.S., Skvortsova, N.Ye., Sokolov, Yu.F.

TITLE: Methods for Determining the Parameters of the Rectifying Contact of Point Microwave Detectors

PERIODICAL: V sb.: Poloprovodnik. pribory i ikh primeneniye. Nr 3. Moscow, "Sov. radio", 1958, pp 13 - 30

ABSTRACT: The authors describe methods for determining the basic parameters of the point contacts of microwave detectors. They estimate the maximum microwave power that is permissible under the described measurement methods. They describe methods of measuring the impedance Z of the rectifying contact, from whose dependence on the constant displacement current it is easy to obtain the values of C_0 (the charge capacity), r (the resistance against fanning out through the thickness of the semiconductor), and τ (the lifetime of the minority carriers). They

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SOV/58-59-7-16214

Methods for Determining the Parameters of the Rectifying Contact of Point Microwave Detectors

provide a method for determining the parameters of the rectifying contact from the dependence of the detector's voltage sensitivity β_u on the constant positive displacement current.

The authors' résumé

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21654

9,4340 (3005, 1143, 1151)

S/109/61/006/003/009/018
E140/E135

AUTHOR: Sokolov, Yu.F.

TITLE: Modified Fourpole Method for Determining Contact Resistance of Microwave Semiconductor Diodes

PERIODICAL: Radiotekhnika i elektronika, 1961, Vol.6, No.3, pp. 399-405

TEXT: If the diode holder, diode head and a certain line section loaded by the diode are considered as a linear fourpole, the impedance of the contact wire can be calculated from the standing wave pattern. In place of using the contact plane as the origin of coordinates, as N.A. Penin and N.Ye. Skvortsov did (Radiotekhnika i elektronika, 1956, Vol.1, 8, 1071) (Ref.3), the author finds from certain initial assumptions that the origin of coordinates should be the plane of a standing-wave node in open-circuit operation. Establishment of the parameters of the measuring system depends on the use of a diode with purely ohmic contact, with value of resistance independent of frequency. A basic assumption of the method is the invariance of the fourpole with change of diode holder. In the experimental part
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**Modified Fourpole Method for Determining Contact Resistance of
Microwave Semiconductor Diodes**

of the work Sn-Sb contacts were alloyed in n-type Ge or In-Ga in p-type. Experimental results are tabulated to indicate that the basic assumptions of the method have been justified. In an appendix one of the basic relations of the method is examined in detail.

There are 2 figures, 2 tables and 6 Soviet references.

ASSOCIATION: Institut radiotekhniki i elektroniki, AN SSSR
(Institute of Radio Engineering and Electronics,
AS USSR)

SUBMITTED: July 16, 1960

Card 2/2

30435

S/109/61/000/012/010/020
D246/D005

9,4340 (1143, 1150)

AUTHORS: Ivanov, S.N., Skvortsova, N.Ye., and Sokolov, Yu.P.

TITLE: Frequency characteristics of welded contact germanium diodes at inverse voltages

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 12, 1961
2028 - 2035

TEXT: In the present article the frequency characteristics are analyzed of n- and p- type Ge diodes with welded contact (with half-sphere geometry). The diodes were manufactured by the process described by the authors previously (Ref. 6: Radiotekhnika i elektronika, 1959, 4, 9, 1508). Diodes with ohmic contact were also investigated, made of p-type Ge by the same process as those of n-type. It may be assumed that the geometry of ohmic contacts and contacts with barrier layer are the same, i.e. that the series resistance r_s in both types is the same. The characteristics were investigated in the equivalent circuit of the diode consisting of the series resistance r_s , connected in series with a parallel com-

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Frequency characteristics of welded ...

combination of R-leakage resistance and C-capacitance. At low frequencies r_{si}^0 was measured by extrapolating the resistance in the forward direction. With current varying between 100 and 500 microamps. no modulation of conductivity has been observed. The SHF measurement of contact impedance Z was carried out between $3 \times 10^9 - 6 \times 10^{10} \text{ sec}^{-1}$ by the method given by Yu.F. Sokolov (Ref. 7: Radiotekhnika i elektronika, 1961, 6, 3, 399) and by F.S. Rusin, N.Ye. Skvortsova, and Yu.F. Sokolov (Ref. 8: Sb. Poluprovodnikovyye pribory i ikh primeneniye, 1968, 5, 13) using the above mentioned equivalent circuit. Three methods are suggested of measuring r_s . 1) Determining r_s from the measurements of resistance of diodes with ohmic contact Z_{om} ; 2) Determining r_s from the extrapolation of $\text{Re}Z$ towards large current; 3) Determining r_s from the value of C which is given by

$$C(U) = \frac{\pi d^2}{2} \sqrt{\frac{eqN}{8\pi(\varphi_R + U)}} \quad (5)$$

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Frequency characteristics of welded ...

in which ε - specific inductive capacitance; q - charge of electron
 N - impurity concentration in the n-region; φ_K - contact potential
 difference, from which $r_s \sqrt{C} = \text{const}$. The experimental results
 show that the character of basic properties is the same for n- and
 p-type germanium. The results of measurements of r_s are tabulated
 in Tables 1 and 2. The capacity of the barrier layer C and the leak-
 age resistance R has been found to be independent of frequency and
 proportional to $(\varphi_K + U_{\text{rev}})^{-1/2}$ or, as expected, it is a charge ca-
 pacitance. The evaluation of R is stated to be possible only for
 diodes, for which the loss resistance R_L is much larger than r_s .

R has been found to be directly proportional to the reverse voltage
 and is of the order of $\sim 10^3$ ohm for the given frequency range. The
 frequency dependence of the loss resistance is shown in Fig. 7. The
 results obtained show therefore the following: 1) r_s in contrast to
 r_{si}^0 is independent of frequency in a given frequency range. It can-
 not be explained by the modulation of the semi-conductor conductan-
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D24b/D305

Frequency characteristics of welded...

ce. If $r_s = \rho/\pi d$, and ρ - modulation do not exist, it has to be assumed that changes in r_s are determined by those of d . In fact the expression for r_s should be

$$r_s = \frac{\rho}{\pi(d + 2L_0)} \quad (8) \quad +$$

where L_0 is the length of the diffusion path. At high frequencies the diffusion component of SHF current is limited by the region of technological boundary of transition $L_w \sim \sqrt{D/\omega}$. Since it may be shown that $L_w \ll d$, r_s would be determined by $r_s = \rho/\pi d$ and would be independent of frequency: r_s has been found smaller for n-type germanium diodes as compared with p-type because of the greater mobility of majority carriers. The dependence of the loss resistance on frequency and its differing from r_{si}^0 are due to the different values of r_s at low and SHF frequencies and to the frequency dependence of μ . The author acknowledges the constructive criticism of card 4/8.

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S/109/61/006/012/010/020

Frequency characteristics of welded ... D246/D305

their work by S.G. Kalashnikov. There are 9 figures, 2 tables and 10 references; 5 Soviet-bloc and 5 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: A. Uhler, Proc. I.R.E., 1958, 46, 6, 1099; M. Uenohara, Proc. I.R.E., 1960, 48, 2, 169; S.T. Eng; R. Solomon, Proc. I.R.E., 1960, 48, 3, 358; D.E. Sawyer, J. Appl. Phys., 1959, 30, 3, 166.

SUBMITTED: February 14, 1961

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Card 5/8

41383

S/024/62/000/005/001/012
E140/E135

201110
AUTHOR: Sokolov, Yu.E. (Moscow)

TITLE: Steady-state flow of electrically-conductive gas in a
MHD generator with constant potential along the
electrodes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye
tekhnicheskikh nauk. Energetika i avtomatika, no.5,
1962, 45-48

TEXT: An incompressible, non-viscous and non-heat-conducting
fluid with finite electrical conductivity flows in a channel with
rectangular section and constant height. The parallel walls are
non-conductive, while the other two walls are shaped to satisfy
certain conditions and are conductive (Fig.1). Perpendicular to
the non-conductive walls is a magnetic field B which varies along
the axis of the channel. The equations of continuity, motion,
state of an ideal gas, energy and Ohm's law are written for this
system. The system of equations obtained is indeterminate, since
nine variables are related by five equations, permitting the
choice of parameters for optimal performance. Since the temperature
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Steady-state flow of ...

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E140/E135

of the gas should be as high as possible, but is limited by the characteristics of the channel material, the gas temperature can be maintained constant, at the highest possible value, along the length of the channel. Then the gas conductivity is also constant, since it is mainly determined by the temperature. Since the channel walls are continuous, the potential between opposite points of the current collectors will be constant. The efficiency along the channel can also be made constant, to reduce Joule losses. The introduction of these conditions into the system equations, and rearrangement, yield a single equation with separable variables. Finally an equation is obtained relating the gas velocity to the distance along the channel. This is expanded in a power series and integrated termwise. Under the usual conditions, four terms of the expansion are sufficient for 10% accuracy. The conditions for maximum power per unit length and maximum power output are found:

$$N = \int_V jE \, dV = \frac{2h U}{mg} \int_0^x uB (1 - \eta) \, dx \quad (3.1)$$

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L 12642-63

BDS

ACCESSION NR: AT3002998

S/2927/62/000/000/0145/0152

AUTHOR: Ivanov, S. N.; Skvortsova, N. Ye.; Sokolov, Yu. F.

49

TITLE: Reverse-bias frequency characteristics of welded-contact germanium diodes
[Report of the All-Union Conference on Semiconductor Devices held in Tashkent from
2 to 7 October 1961]

SOURCE: Elektronno-dy*rochny*ye perekhody* v p*-uprovodnikakh. Tashkent, Izd-vo
AN UzSSR, 1962, 145-152

TOPIC TAGS: germanium diode, welded-contact germanium diode

ABSTRACT: Effect of superhigh frequency (SHF) on the series equivalent resistance and other characteristics of Ge diodes was determined experimentally. Two kinds of n-type Ge diodes were tested: (1) with a welded contact and (2) with an "ohmic" contact. Three methods of determining the series equivalent resistance at SHF are discussed: (1) from ohmic-contact test, (2) by extrapolation, and, (3) by measuring capacitance. Measurements were made at 0.59x, 1.23x, 1.94x, and 5.9x10 sup 10 cps. Barrier-layer capacitance and leakage resistance were measured as a function of the reverse bias voltage at 7 frequencies, from 3 x 10 sup 9 to 6 x 10 sup 10 cps. Loss resistance was measured at (a) frequencies up to 5 x 10 sup 10 cps and (b) reverse bias voltages up to 2 v. In conclusion, an explanation based on the above

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L 12642-63

ACCESSION NR: AT3002998

measurements is offered of the fact that the series equivalent resistance depends on frequency in the SHF band. Orig. art. has: 6 figures and 9 formulas.

ASSOCIATION: Akademiya nauk SSSR (Academy of Sciences SSSR) Akademiya nauk Uzbekskoy SSR (Academy of Sciences UzSSR) Tashkentskiy gosudarstvennyy universitet (Tashkent State University)

SUBMITTED: 00

DATE ACQ: 15May63

ENCL: 00

SUB CODE: 00

NO REF SOV: 006

OTHER: 005

Card 2/2

S/109/63/008/003/014/027
D271/D308

AUTHOR: Sokolov, Yu. F.

TITLE: On the theory of p-n junctions

PERIODICAL: Radiotekhnika i elektronika, v. 8, no. 3, 1963,
471-478

TEXT: Contradictions to existing theories of p-n junctions are presented and a novel boundary condition is formulated which takes account of hole transport across the boundary. Existing theories of p-n junctions at high injection levels postulate a low density of the space charge arising from the divergence of the electric field, by comparison with the sum of the charges of the ionized impurity and mobile carriers, while assuming at the same time that excess carriers do not penetrate beyond the boundary but recombine in the boundary plane. The above two premises are shown to be contradictory. The junction is analyzed, taking account of carrier transport across the boundary. Electron

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On the theory...

current equations for the n-region lead to simplified expressions for the quasi-neutral n-region involving a non-linear equation for the hole concentration. A new boundary condition is formulated on the basis of phenomenological considerations and assuming that the current across the boundary is proportional to the boundary concentration of holes p_d and that the total current across the boundary is proportional to the junction current. The boundary condition is

$$j_p(d - 0) = s(p_d - p_n) + \frac{j}{Q} p_d, \quad (19)$$

where j_p is the density of the hole current; d --depth; p_d , p_n --hole concentration in the n-region; j --total current density; Q --an experimental parameter. In the case of high injection levels, Eq. (19) is simplified by omitting the first term on the right-hand side. An exponential expression is then derived for

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On the theory...

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the current-voltage characteristics of the junction. The differential conductance is found to be proportional to the total current density. Experimental data confirm the validity of the analysis. It is pointed out that it is not possible for a junction to have a characteristic $j \sim e^V$ at high injection levels. The valuable advice and criticism of N. A. Penin are acknowledged. There is 1 figure.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR
(Institute of Radio Engineering and Electronics,
AS USSR)

SUBMITTED: June 15, 1962

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L 12960-63
AT

EWG(k)/EWT(1)/BDS/EEC(b)-2

AFFTC/ASD/ESD-3 Pz-4 IJP(C)/
S/109/63/008/004/016/030

AUTHOR: Sokolov, Yu. F.

63
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TITLE: Frequency characteristics of pn-junctions 71

PERIODICAL: Radiotekhnika i elektronika, v. 8, no. 4, 1963, 659-668

TEXT: A theoretical investigation is made of the frequency characteristics of non-symmetrical pn-junctions at high injection levels. The author examines extreme individual cases of low and high frequencies. He computes the properties of junctions—for both direct and reverse voltage—in a case when the period of the HF signal is small as compared with the duration of the dielectric relaxation in the vicinity of $x = 0$. He finds that frequency characteristics of pn-junctions at high injection levels show certain specific properties they do not possess at lower injection levels: at low frequencies, the junction inertia—at high induction levels—has an inductive character, while in the UHF range conductivity of the junction is active, and—in magnitude and character of its relation to the voltage—is close to the low-frequency differential conductivity. The author finds that there is a tendency to utilize this latter property of junctions for designing selector switches, modulators, and attenuators for use in the UHF range. On the basis of computations explained in the article, the author proposes an equivalence system

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Frequency characteristics of

describing the frequency characteristics of the junctions at high injection levels. He also examines the properties of junctions at high and low injection levels when $\omega \tau_Q \gg 1$.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR, (Academy of Sciences USSR)

SUBMITTED: June 15, 1962

Card 2/2

SOKOLOV, Yu.F.

Theory of the frequency characteristics of p-n junctions at large
injection levels. Radiotekh. i elektron. 8 no.12:2093-2097 D
'63. (MIRA 16:12)

ACCESSION NR: AP4038617

3/0109/64/009/004/0660/0669

AUTHOR: Sokolov, Yu. F.

TITLE: Experimental investigation of thin p-i-m junctions

SOURCE: Radiotekhnika i elektronika, v. 9, no. 4, 1964, 660-669

TOPIC TAGS: diode junction, pim junction, forward characteristic, inverse characteristic, attenuator, modulator, electronic switch

ABSTRACT: The author's earlier theoretical calculations (Radiotekhnika i elektronika 1963, v. 8., no. 3, 471 and no. 4, 659) are checked experimentally on dc and microwave frequencies (18.5 and 60 Gc) with an aim at developing engineering design methods for control elements (switches, attenuators, and modulators) based on p-i-m diodes. The technique used to prepare the experimental diode and the test and data-reduction procedures are described. The tests consisted essentially of measuring the voltage-current characteristic and the differential conductances for both forward and inverse voltages. An important step in the calculation was the elimination of the effect of

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ACCESSION NR: AP4038617

the contact and parasitic resistances, so that the resultant conductivity vs. voltage curves (see Figs. 1 and 2 of the Enclosure) holds for the junction only, without the cartridge and the leads. The resultant forward and inverse voltage-current characteristics are found to agree well with the theory. The tests at inverse voltage show also that the p-i-m junction is quite abrupt, with thickness 0.0024 cm. The recombination rate is found to be 1.1×10^4 cm/sec, and the p_0/n_1 ratio ranges from 10 to 30. The author is grateful to Z. A. Kozlova for help with the preparation of the diode samples. Orig. art. has: 6 figures and 14 formulas.

ASSOCIATION: None

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ENCL: 02

SUB CODE: EC

NO REF SOV: 015

OTHER: 005

Card 2/4

ACCESSION NR: AP4038617

ENCLOSURE: 01

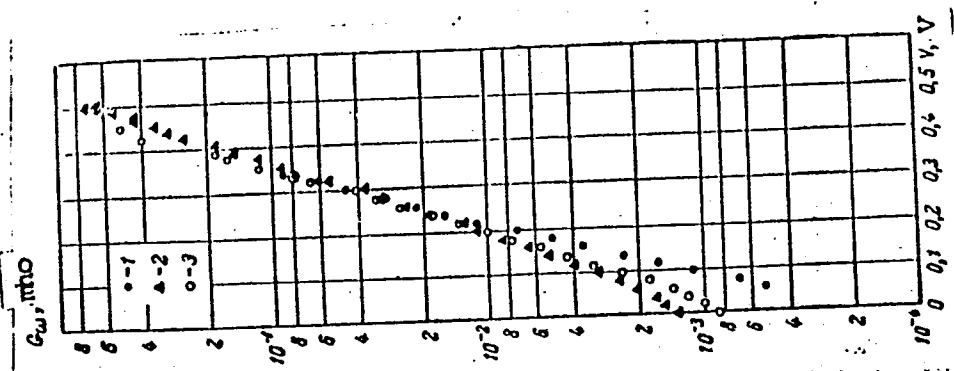


Fig. 1. Conductivity vs. voltage

1 - $\omega = 0$, 2 - $\omega = 1.85 \times 10^{10} \text{ sec}^{-1}$, 3 - $\omega = 6 \times 10^{10} \text{ sec}^{-1}$

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ACCESSION NR: AP4038617

ENCLOSURE: 02

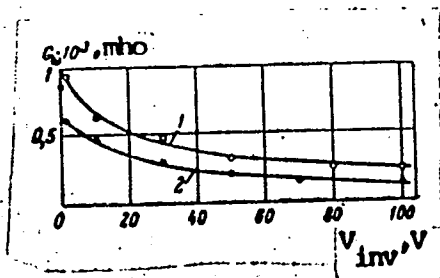


Fig. 2. Conductivity vs. inverse voltage

1 - $\omega = 6 \times 10^{10}$, 2 - $\omega = 1.85 \times 10^{10}$ sec⁻¹

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SOKOLOV, Yu.F.

Amplification of external action effects using a p-n junction.
Radiotekh. i elektron. 10 no.1:195-198 Ja '65. (MIRA 18:2)

1. Institut radiotekhniki i elektroniki AN SSSR.

IVANOV, Sergey Nikolayevich; PENIN, Nikolay Alekseyevich;
SKVORTSOVA, Nera Yefimovna; SOKOLOV, Yuriy Fedorovich;
VOLKOVA, I.M., red.

[Physical principles of the operation of semiconductor
microwave diodes] Fizicheskie osnovy raboty poluprovod-
nikovykh SVCh diodov. [by] S.N.Ivanov i dr. Moskva,
Sovetskoe radio, 1965. 190 p. (MIRA 18:5)

IVANOV, Sergey Nikolayevich; PENIN, Nikolay Alekseyevich;
SKVORTOVA, Nera Yefimovna; SOKOLOV, Yuriy Fedorovich;
VOLKOVA, I.M., red.

[Physical principles of the operation of superhigh frequency semiconductor diodes] Fizicheskie osnovy raboty poluprovodnikovyykh SVCh diodov. Moskva, Sovetskoe radio, 1965. 190 p. (MIRA 18:7)

GOGANOV, D.A.; PORAY-KOSHITS, Ye.A.; SOKOLOV, Yu.G.

Finding and studying very small heterogeneities in glass with the
help of a new, small-angle, X-ray unit. Steklobr. sost. no. 2:44-46
'63. (MIRA 17:10)

ANDREYEV, N.S.; GOGANOV, D.A.; PORAY-KOSHITS, Ye.A.; SOKOLOV, Yu.G.

Chemically heterogeneous structure of two-component sodium and lithium
silicate glass. Stekloobr. sost. no. 346-53 '63. (MIRA 17:10)

1. Zh. V., V.S., Zhur. V., Zhur. V.; KLEIN, E.A.

oxidation of metallic neodymium and the rate of the $\alpha \rightarrow \beta$
polymorphic transformation of Gd_2O_3 . Zhur. fiz. khim. 38
no. 5:1126-1134 May '64. (MIRA 18:112)

1. Institut khimii silikatov imeni Grebenshchikova AN SSSR.
Submitted April 26, 1963.

L 19592-65 EWG(j)/EWT(m)/EPF(c)/EPR/EWP(t)/EWP(b) Pr-4/Ps-4 IJP(c)/
ASD(F)-3/ESD(t) JD/JG
ACCESSION NR: AP4045100 S/0020/64/158/001/0151/0154

AUTHOR: Glushkova, V. B. ; Keler, E. K. ; Sokolov, Yu. G. ; Semenov, N. N.

TITLE: Reaction of Nd_2O_3 with water

SOURCE: AN SSSR. Doklady*, v. 158, no. 1, 1964, 151-154

TOPIC TAGS: neodymium oxide water system, neodymium oxide, hydrate, stability, structure

ABSTRACT: The Nd_2O_3 -water system was studied: neodymium oxide hydrates were obtained by hydrothermal synthesis; neodymium oxides were reacted with water at different temperatures and under different relative humidities; and the stability and structure of the hydrated neodymium oxides were determined. Both the A- and C- modification of Nd_2O_3 were formed in a relative moist atmosphere of 25-95%. At 35 C the A-form was stable to water vapor while the C-form hydrated to $3\text{Nd}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ (I). I was also formed by the C-form at 90-100C regardless of humidity, while the A-form formed the trihydrate $\text{Nd}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$. In the 100-400C range the C-form gained weight (with accompanying crystal lattice dis-

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L 19592-65

ACCESSION NR: AP4045100

tortion) in moist oxygen or moist argon, forming I, but no higher oxides. I started to decompose at ~250 C to $\text{Nd}_2\text{O}_3 \cdot \text{H}_2\text{O}$, which at 450 C formed $3\text{Nd}_2\text{O}_3 \cdot \text{H}_2\text{O}$. The latter reverted to the hexagonal A-form Nd_2O_3 at 800-1000 C. The elementary cell parameters were determined for these compounds. It was concluded the phases generally assumed to be the C-form were actually the hydrate $3\text{Nd}_2\text{O}_3 \cdot \text{H}_2\text{O}$. Orig. art. has: 2 figures

ASSOCIATION: Institut khimii silikatov im. I. V. Grebenshchikova Akademii nauk SSSR (Institute of Silicate Chemistry Academy of Sciences, SSSR)

SUBMITTED: 20Apr64

ENCL: 00

SUB CODE: IC, GC

NO REF SOV: 003

OTHER: 008

Card 2/2

SOKOLOV, Yu. [G.]

USSR/Radio - Television, Receivers
Lenses

Apr 50

"A Lens for Television Sets," A. Tsitovich, Yu. Sokolov, 2 pp

"Radio" No 4

Lenses for this purpose were described in "Radio" last year [see FDD Per Abs 153T1C9]. These types had to be placed some distance from screen, which resulted in distortion. Viewer's eye had to be near optical axis of lens. These defects can be overcome by filling space between lens and screen with medium whose refractive index approaches that of glass, e. g., turpentine. Describes construction of such a lens.

PA 157T103

PA 163T84

SOKOLOV, Yu.G.

USSR/Physics - X-Ray Analysis
X-Ray Cameras

Jun 50

"X-Ray Camera for Investigation of Submicroscopic
Structure," Yu. G. Sokolov, Inst of Chem of Sili-
cates, Acad Sci USSR

"Zavod Lab" Vol XVI, No 6, pp 693-696

Describes X-ray camera which permits employment of
method of small angles in X-ray analysis. Camera
design provides for possibility of monochromatiza-
tion of X-rays by reflection from ground monocrystal
of rock salt. X-raying may be performed with any
X-ray tube which has horizontal anode surface.

163T84

CM SOKOLOV, Yu. G.

Diffuse small-angle scattering of x-rays. E. A. Porol-Koshits and Yu. G. Sokolov (Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 72, 477-80 (1950).
Photomicrograms of x-ray scattering lines of 5 samples of $\text{Na}_2\text{O}-\text{B}_2\text{O}_3-\text{SiO}_2$ glasses, of the initial compn. (I) 5-20-75, (II) 0-24-76, (III) 4-20-76, (IV) 5-20-75, (V) 7-28-65, annealed 12 hrs. at 530° and made porous by treatment with 3 N HCl, taken under small angles ranging from 10.5 min. to a max. of 1° 25 min., gave, by the small-angle scattering formula, a min. radius of, respectively, 27, 51, 60, 88, 100 Å. The size of the particles and pores evidently increases with decreasing SiO_2 content in the original glass. These values check fairly well with those derived from adsorption isotherms of H_2O , 10, 45, 50, 60, 74 Å., and of CO_2 , 18, 40, 47, 53, 68. The same glass, 7-23-70, quenched from 700 and 750°, gave for the size of channels, resp., 300 and 100 Å. This difference checks with the

- Inst. Chem. Sci. U.S.S.R.

appearance of the 2 samples, one opalescent, the other transparent. X Then

ACCESSION NR: AT4019283

S/0000/63/003/001/0044/0046

AUTHOR: Goganov, D. A.; Poray-Koshits, Ye. A.; Sokolov, Yu. G.

TITLE: Detection and study of very small heterogeneities in glass by means of a new small-angle x-ray apparatus

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vyip. 1: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 44-46

TOPIC TAGS: glass, x-ray analysis, lithium glass, borosilicate glass, lithium silicate, light scattering, glass crystallization, glass structure

ABSTRACT: A new apparatus was developed for recording very low intensities during the x-ray study of the submicroscopic structure of glass. The apparatus based on the previously known collimation device, also includes a proportional quantum counter and an amplitude analyzer. The apparatus and its advantages are described. Sodium borosilicate glass, containing 7% Na₂O, 23% B₂O₃ and 70% SiO₂ (mol.%) was used as the test material. When the intensity curves were plotted for three samples heated at different temperatures (600, 530 and 750C) for different lengths of time, the dimensions of the heterogeneous areas were found to be 55A.

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ACCESSION NR: AT4019283

In order to measure lower intensities, two lithium silicate glass samples containing 23.5 Li_2O and 76.5% SiO_2 or 25.5% Li_2O and 74.5% SiO_2 , respectively, were investigated. By comparing the intensity of small angle scattering with the intensity of the incident light beam, the absolute value of the scattering intensity, and hence the value of the mean square difference in electron density (this being a quantitative measure of chemical heterogeneity) could readily be determined with the new device. The precrystallization structure of glass and its effect on the initial stage of crystallization can also be investigated by this apparatus. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 17May63

DATE ACQ: 21Nov63

ENCL: 00

SUB CODE: MT

NO REF SOV: 002

OTHER: 001

Card 2/2

ACCE V NR: AT4019284

S/0000/63/003/001/0046/0053

AUTHOR: Andreyev, N. S.; Goganov, D. A.; Poray-Koshits, Ye. A.; Sokolov, Yu. G.

TITLE: The chemically heterogeneous structure of binary sodium and lithium silicate glass

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vy*p. 1: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 46-53

TOPIC TAGS: crystal heterogeneity, x-ray diffraction, lithium glass, glass silicate, sub-microscopic structure, binary system, glass structure

ABSTRACT: The binary systems $\text{Na}_2\text{O}-\text{SiO}_2$ and $\text{Li}_2\text{O}-\text{SiO}_2$ were investigated by roentgenographic techniques. In order to improve the characterization of the submicroscopic structure of glass, in addition to the size of the heterogeneous regions, the mean square difference in their electron densities was determined as a measure of the degree of heterogeneity. The mathematical approach to this is described. The composition conditions of thermal treatment and preparation of the test samples are given. Sodium silicate glass containing 11.5-18.5% mol. % Na_2O was used. A characteristic feature of all test samples was their ability to become opalescent after thermal treatment. When the relationship between cloudiness

Card 1/2

ACCESSION NR: AT4019284

and temperature was plotted, the temperature at which opalescence disappeared (785 C for a glass containing 14 mol. % Na₂O) was found to be inversely proportional to the Na and Li content. The intensity of small-angle x-ray scattering is an accurate indication of the heterogeneity of sodium and lithium silicate glass. The way in which this scattering varies with the composition and thermal treatment was investigated, and the critical temperature beyond which the heterogeneity increased with increasing temperature was determined. Whereas the mean square difference of the electron densities decreases regularly with the Li₂O content, in the case of sodium it first increases, reaching a maximum at about 11.5 mol. % Na₂O. "The authors thank Ye. V. Podushko for fusing the glass containing 5-10 mol. % Na₂O in a high-frequency electric furnace." Orig. art. has: 6 figures, 1 table and 6 formulas.

ASSOCIATION: none

SUBMITTED: 17May63

SUB CODE: MT

DATE ACQ: 21Nov63

NO REF SOV: 013

ENCL: 00

OTHER: 006

Card 2/2

L 13383-63 EPR/EWT(1)/EWP(q)/EWT(m)/EDS AFFTC/ASD Ps-4/Pq-4 WW/WH
S/0120/63/000/003/0155/0160

ACCESSION NR: AP3002744

AUTHOR: Goganov, D.A.; Poray-Koshits, Ye. A.; Sokolov, Yu. G.

TITLE: Small-angle chamber with a proportional x-ray counter 21

SOURCE: Pribery* i tekhnika eksperimenta, no. 3, 1963, 155-160

TOPIC TAGS: small-angle chamber, x-ray counter

ABSTRACT: A new demountable proportional counter of x-ray quanta and a special small-angle chamber are described. Two counter versions, argon-filled and xenon-filled, were built and operated in conjunction with a calcium purifier. The counter pulses were fed to a USh-2 amplifier (overall gain 3×10^5), thence to a single-channel kick sorter, and finally to a scaler. The steel chamber enclosed a 100-micron-wide collimator and had 0.25-mm-thick inlet and outlet beryllium windows. The outfit was used for determining diffraction patterns of sodium-borosilicate and lithium-silicate glass that contained micro-inhomogeneities. The counter and chamber constructions, a functional block-diagram, and small-angle dispersion characteristics are presented.

ASSN: Inst. of Chemistry of Silicates, AN SSSR

Card 1/2

68
67

ACCESSION NR: A#4039617

S/0076/64/038/005/1126/1134

AUTHORS: Glushkova, V.B. (Leningrad); Sokolov, Yu.G. (Leningrad);
Keler, E.K. (Leningrad)

TITLE: Oxidation of metallic neodymium and the rate of the C → A
polymorphic transformation of Nd sub 2 0 sub 3

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 5, 1964, 1126-1134

TOPIC TAGS: neodymium oxidation, neodymium oxidation rate, neodymium
sequioxide, neodymium sequioxide A, neodymium sequioxide C, neo-
dymium oxide C→A transformation, neodymium oxide crystal lattice,
neodymium sequioxide stable form, anion vacancy, cation vacancy

ABSTRACT: The oxidation rate of powdered Nd was studied in the air
and in thoroughly dried oxygen. The equipment, which is described
and figured, was set up so as to provide for continuous weighing of
the 0.1 - 0.3 g sample at 1.10⁻¹ to 760 mm Hg pressures and 20-1500C
temperatures. In preliminary tests with oxygen it was found that at
an oxygen pressure of over 10 mm Hg the oxidation rate does not
depend upon further pressure changes. Thus tests were then conducted
at 100 mm pressure. The results are tabulated and graphed. At 240-

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ACCESSION NR: AP4039617

3000 temperatures the oxidation rate showed linear dependency; this decreased as the oxide layer increased so as to become a parabolic curve. In dry oxygen the constant of the oxidation rate was found: $C = 6.10 \cdot 10^9 \text{ min}^{-1}$ and the activation energy $E = 38.93 \pm 0.05 \text{ kcal}$. The A-form was produced upon oxidation in dry oxygen at 250 - 5000 (X-ray determination) and was the only stable form of the sesquioxide up to 1200C. In another series of tests investigation the change $C \rightarrow A \text{ Nd}_2\text{O}_3$ at various temperatures the cubic form was used as starter material. The change was shown to occur at 800-1000C and did not reverse upon subsequent cooling. The rate of transformation $C \rightarrow A$ depended upon the degree of perfection of the crystal lattice of the metastable C-form. Lesser perfection resulted in transformation at lower temperatures. The activation energy of the 99.9% pure specimen was $E = 100.26 - 0.04 \text{ kcal}$ and the constant $C = 1.03 \cdot 10^{16} \text{ min}^{-1}$. Orig. art. has: 6 tables, 6 figures and 4 formulas.

ASSOCIATION: Institut khimii silikatov im. I.V. Grebenchshikova AN SSSR
(Institute of Silicate Chemistry, AN SSSR)

SUBMITTED: 26Apr63

ENCL: 00

SUB CODE: GC, IC

NR REF SOV: 006

OTHER: 011

Card 2/2

SOKOLOV, Yu.I. (Moskva, Volokolamskoye shosse, d.1, kv.218); LEVINA, L.A.

X-ray diagnosis of bronchogenic cysts of the mediastinum. Grud.
khir. no.3:69-74 '61. (MIRA 14:9)

1. Iz 2-y kafedry rentgenologii i meditsinskoy radiologii (zav. -
prof. Yu.N. Sokolov) Tsentral'nogo instituta usovershenstvovvaniya
vrachey (dir. M.D. Kovrigina) na baze Gorodskoy bol'nitsy No.50
(glavnyy vrach I.P. Brusova).
(MEDIASTINUM---RADIOGRAPHY) (CYSTS)

SOKOLOV, Yu. I.

PHASE I BOOK EXPLOITATION SOV/5592

Vsesoyuznoye soveshchaniye po vnedreniyu radioaktivnykh izotopov i yadernykh izlucheniya v narodnom khozyaystve SSSR. Riga, 1960.

Radioaktivnyye izotopy i yadernyye izlucheniya v narodnom khozyaystve SSSR; trudy Vsesoyuznogo soveshchaniya 12 - 16 aprelya 1960 g. g. Riga, v 4 tomakh. t. 4: Poiski, razvedka i razrabotka poleznykh iskopayemykh (Radioactive Isotopes and Nuclear Radiation in the National Economy of the USSR; Transactions on the Symposium Held in Riga, April 12 - 16, 1960; in 4 volumes. v. 4: Prospecting, Surveying, and Mining of Mineral Deposits) Moscow, Gostoptekhnizdat, 1961. 234 p. 3,640 copies printed.

Sponsoring Agency: Gosudarstvennyy nauchno-tekhnicheskyy komitet Soveta Ministrov SSSR. Gosudarstvennyy komitet Soveta Ministrov SSSR po ispol'zovaniyu atomnoy energii

Eds. (Title page): N. A. Petrov, L. I. Petrenko, and P. S. Savitskiy; ed. of this volume: M. A. Speranskiy; Scientific ed.: M. A. Speranskiy; Executive Eds.: N. N. Kuz'mina and A. G. Ionel';

Card 1/11

Radioactive Isotopes and Nuclear (Cont.)

SOV/5592

Tech. Ed.: A. S. Polosina.

PURPOSE : The book is intended for engineers and technicians dealing with the problems involved in the application of radioactive isotopes and nuclear radiation.

COVERAGE: This collection of 39 articles is Vol. 4 of the Transactions of the All-Union Conference of the Introduction of Radioactive Isotopes and Nuclear Reactions in the National Economy of the USSR. The Conference was called by the Gosudarstvennyy nauchno-tekhnicheskii komitet Sovet Ministrov SSSR (State Scientific-Technical Committee of the Council of Ministers of the USSR), Academy of Sciences USSR, Gosplan SSSR (State Planning Committee of the Council of Ministers of the USSR), Gosudarstvennyy komitet Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu (State Committee of the Council of Ministers of the USSR for Automation and Machine Building), and the Council of Ministers of the Latvian SSR. The reports summarized in this publication deal with the advantages, prospects, and

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Radioactive Isotopes and Nuclear (Cont.)

30V/5592

development of radioactive methods used in prospecting, surveying, and mining of ores. Individual reports present the results of the latest scientific research on the development and improvement of the theory, methodology, and technology of radiometric investigations. Application of radioactive methods in the field of engineering geology, hydrology, and the control of ore enrichment processes is analyzed. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

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Card 6/11		

KLYUCHNIKOV, Ivan Ivanovich; ARKHANGEL'SKIY, Andrey Sergeyevich; Prinyat
uchastiye: VYSOKOSOV, V.I., SOKOLOV, Yu.L., BALANDINSKIY, Ye.D.;
SOSNOV, V.D., otv. red.; SILINA, L.A., red. izd-va; IL'INSKAYA,
G.M., tekhn. red.

[Cutter-loaders PKG-3 and PKG-4] Prokhodcheskie kombainy PKG-3 i
PKG-4. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu,
1961. 174 p. (MIRA 14:8)

(Mining machinery)

YELISEYEV, V.K.; SOKOLOV, Yu.L.

Highly efficient selection of resistances. Izv. tekhn. no. 2:37-40
F '62. (MIRA 15:2)

(Electronic measurements)

L 06974-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(d) JD/AT

ACC NR: AP6018351

SOURCE CODE: UR/0089/66/020/005/0407/0412

AUTHOR: Grechukhin, D. P.; Karpushkina, E. I.; Sokolov, Yu. L.

ORG: none

TITLE: Optic excitation and ionization of fast hydrogen

SOURCE: Atomnaya energiya, v. 20 no. 5, 1966, 407-412

TOPIC TAGS: hydrogen atom reaction, magnetic trap, plasma injection, optic transition, excited state, photoionization, laser application

ABSTRACT: The authors consider the possibility of increasing the efficiency of injection of fast hydrogen atoms into a magnetic trap by one of two methods: 1. By increasing the populations of the upper levels ($n \sim 10$) in a beam of fast hydrogen atom through irradiation with quanta that are resonant to the chosen $n_1 l_1 \rightarrow n_2 l_2$ transition (for example, $2s \rightarrow 10p$). The dependence of the population of the $n_2 l_2$ level on the radiation density and on the travel time of the atom in the optical field is determined. An estimate of the necessary light-source power is presented on the basis of the obtained data. 2. By photoionization of the hydrogen atoms directly in the active zone of the trap. On the basis of the calcu-

Card 1/2

UDC: 533.9:539.186:539.188

Card 2/2

SOKOLOV, Y. L.

4127

NUCLEAR LEVELS IN Li^6 . Y. L. Sokolov, M. M. Sulkovskaja, E. I. Karpushkina and E. A. Albitska. Soviet Phys. JETP 3, 740-4(1956) Dec.

With the aid of the photographic detection method, reactions with emergence of several particles were studied, which arise as a result of interaction of fast deuterons (with energies up to 12.8 Mev) with nuclei of Li^6 and Li^7 . The following reactions were detected: $Li^6(d,2d)He^4$, $Li^6(d,d',p,n)He^4$ and $Li^7(d,t,d')He^4$, which lead to the formation of excited Li^6 nuclei. The following levels of the Li^6 nucleus were found (with $T = 0$): $E_1^* = 2.2$ Mev, $E_2^* \approx 4.5$ Mev and $E_3^* \approx 7.5$ Mev. (auth)

RMZ

nyi

S. Sokolov, Yu. L. ...

Category : USSR/Nuclear Physics - Structure and Properties of Nuclei C..4

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 5957

Author : Sokolov, Yu. L., Sulkovskaya, M. M., Karpushkina, E. T., Al'bitskaya, Ye. A.

Title : Levels of the Li^6 Nuclei

Orig Pub : Zh. eksperiment. i teor. fiziki, 1956, 30, No 6, 1007-1012

Abstract : The photographic-plate method was used to study reactions involving the escape of several particles and occurring upon interaction of 13.8 Mev deuterons with nuclei Li^6 and Li^7 . The lithium is introduced directly in the photographic emulsion, the thickness of which is greater than the range of the deuterons. Reactions $\text{Li}^6 (d, 2d) \text{He}^4$, $\text{Li}^6 (d, d'pn) \text{He}^4$, and $\text{Li}^7 (d, td') \text{He}^4$ were observed, and occurred in two stages. The incident deuterons is scattered and excites the nucleus. The excited nucleus then breaks up into several other particles. The levels of the excited Li^6 nucleus (with $T = 0$) were determined for 2.2, 4.5 and 7.5 Mev.

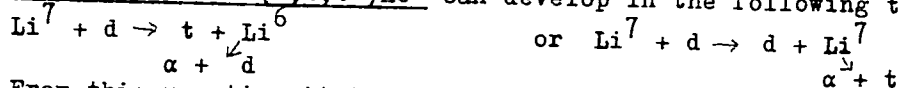
Card : 1/1

Dokl. Akad. Nauk, 111, fasc. 6, 1219-1222 (1956) CARD 2 / 2

PA - 1900

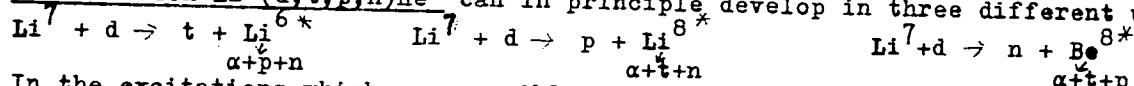
of the corresponding stars. All stars observed in connection with this reaction relate to the decay of excited nuclei from higher levels ($\sim 5,9$ and $\sim 7,4$ MeV). Also the isotopic spins of these levels must be equal to zero because the Li^6 nuclei are excited under the influence of a deuteron.

The reaction $\text{Li}^7(d, t, t')\text{He}^4$ can develop in the following two ways:



From this reaction it is thus possible to determine the position of some levels of Li^6 and Li^7 nuclei. However, utilization of the corresponding stars is somewhat complicated.

The reaction $\text{Li}^7(d, t, p, n)\text{He}^4$ can in principle develop in three different ways:



In the excitations which are possible in this case ($E_{\text{dmax}} = 17,5$ MeV) all three varieties are possible. ($Q_{\text{Li}^6} = -3,7$ MeV, $Q_{\text{Li}^8} = -4,5$ MeV and $Q_{\text{Be}^8} = -20$ MeV).

These varieties and the levels corresponding to them are discussed in detail. The results obtained on this occasion are shown in an attached level-scheme. It is of interest to note that, beginning with $E_{\text{Li}^6} = 3,6$ MeV the levels of Li^6 have approximately equal distances ($\sim 0,8$ MeV).

INSTITUTION:

GORODOV, Yu. L., AL'BITSKAYA, Ye. A., KARPUSHKINA, E.J., SUKOVCHAYA, M.M.

"Energy Levels of Li^6 and He^5 ."

paper submitted at the All-Union Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 November 1957.

AUTHOR: Sokolov, Yu. L.

89-12-10/29

TITLE: Observation of Charged Particle Traces in an Alcohol-Steam Mixture (Nablyudeniye sledov zaryazhennykh chastits v smesi parov spirta i vody)

PERIODICAL: Atomnaya. Energiya, 1957, Vol. 3, Nr 12, pp. 544-545 (USSR)

ABSTRACT: Even in cases, in which a supersaturation does not exist for some reason, in diffusion chambers along the particle courses an optical inhomogeneity might arise at which a light scattering might occur. In order to settle this assumption the working volume of an expansion chamber was filled with air, which was saturated at +7°C by water and alcohol vapour under 2 at. It was illuminated by a mercury capillary lamp (1 kW), the luminous flux of which was 60 000 lumen. In these experiments it is especially difficult to screen the stray light of this lamp of exceedingly luminous intensity, in order to be still able to watch the effect. The results obtained do not permit a certain unmistakable conclusion on the character of the optical inhomogeneity which is caused by the charged particles. The light scatter might originate from drops of condensation suddenly developing. But for the inhomogeneity an impulse wave could be of a certain significance which is formed as a consequence of the rapid energy release in a small space along the particle courses. Further experiments for the

Card 1/2

Observation of Charged Particle Traces in an Alcohol-Steam Mixture. 89-12-10/29

explanation of the mechanism of formation are necessary. There are 2 figures.

SUBMITTED: June 17, 1957

AVAILABLE: Library of Congress

Card 2/2

SOKOLOV, Yu.L.; GURSKIY, A.V.

Experimental study on the effect of cosmic radiation on higher
plants. Probl.kosm.biol. 2:164-169 '62. (MIRA 16:4)
(PLANTS, EFFECT OF COSMIC RAYS ON)

LORELY, I.I., GHEPILY, A.V., DUTCHAK, I.I.

Historical data on higher plants. Histochemical 8 no. 1:127-129
163. (MIRA 17:8)

L 27494-66 EWT(1) SCTB DD

ACC NR: AT6013446

SOURCE CODE: UR/3179/65/007/000/0005/0021

AUTHOR: Gurskiy, A. V.; Ostapovich, L. F.; Sokolov, Yu. L.

ORG: none

TITLE: Effect of high altitude conditions of the Pamir type on higher plants

SOURCE: Vsesoyuznoye botanicheskoye obshchestvo. Problemy botaniki, v. 7, 1965. Voprosy biologii i fiziologii rasteniy v usloviyakh vysokogor'iy (Problems of biology and physiology of plants at high altitudes), 5-21

TOPIC TAGS: UV light, UV irradiation, plant development, plant ecology, radiation plant effect, plant growth, solar radiation effect

ABSTRACT: From 1940 to 1960 the Pamir Botanical Garden in Khorog investigated the effects of high altitude conditions on over 10,000 plants growing on Pamir slopes, which are marked by a dry continental climate and intense solar radiation. In the present article inherent characteristics of high altitude plants and effects of intense UV radiation including literature data are discussed. In a series of

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L 27494-66

ACC NR: AT6013446

experiments using a quartz UV lamp to simulate solar radiation, the effects of different light intensities on plants were studied. Findings indicate that large UV radiation doses which often cause plant injuries under normal altitude conditions do not kill a single plant and in some cases produce a definite favorable effect. Productivity of many plants, such as onion, carrot, and barley, is increased with reduction of distance between plants and the UV lamp. Beet, radish, and sorghum crops are decreased with direct UV radiation and markedly increased when plants are placed along both sides of a lamp, indicating that these crops react more favorably to smaller UV radiation doses. Potatoes, cabbages, and beans react negatively to UV radiation. With irradiation of carrots, the roots increase in size and branch out extensively and the number of leaves also increases, indicating that UV radiation activates meristeme differentiation and induces new plant formations. In some cases the aftereffect of UV radiation is expressed in the following generation by changing an annual into a perennial. The dry climate and intense solar radiation of the Pamirs provide a unique natural laboratory for investigations of this type. Orig. art. has: 8 figures.

SUB CODE: 06/ SUBM DATE: none/ ORIG REF: 011/ OTH REF: 024

Card 2/2 BLG

KAZAKOV, A.N.; SOKOLOV, Yu.M.

Geology of the Orkolikan series overburdening lower Proterozoic
formations in the central part of the Northern Baikal Highland.
Trudy lab. geol. dokem. no.7:231-245 '57. (MIRA 11:3)
(Northern Baikal Highland--Rocks, Sedimentary)

SOKOLOV, Yu.M.

Recrystallization of mica-bearing pegmatites in the Mama region
(Chuya muscovite deposit). Trudy Lab.geol dokem. no.9:298-305
'59. (MIRA 13:11)
(Mama Valley--Pegmatites)

SOKOLOV, Yl.M.

Distribution of mica and other minerals in pegmatite veins of
the Chuya muscovite deposit (Mama-Chuya mica-bearing area).
Zap.Vses.min.ob-va 88 no.2:191-196 '59. (MIRA 12:8)

1. Laboratoriya geologii dokembriya AN SSSR.
(Mama-Chuya District--Mineralogy)

JOXOLOV, Yu. M. Cand Geol-Min Sci -- "Geology and petrology of pegmatites of the Mama mica-bearing region and their connection with the local metamorphism." (North-Baykal elevation)." Len, 1960. (Min of Higher and Secondary Specialized Education RSFSR. Len Order of Lenin and Labor Red Banner Mining Inst in G. V. Plakhenov) (KL, 1-61, 185)

VELIKOSLAVINSKIY, D.A.; SOKOLOV, Yu.M.

Relationship between the genesis and mineralization of pegmatites on the one hand and the areal metamorphism on the other as illustrated by the pegmatites in the Mama region. Zap.Vses.min. ob-va 89 no.2:208-213 '60. (MIRA 13:7)

1. Laboratoriya geologii dokembriya AN SSSR, Leningrad.
(Pegmatites) (Metamorphism (Geology))

SOKOLOV, Yu.M.; BYKOVA, V.S.; MANUYLOVA, M.M.

Garnets in pegmatite veins of ~~the~~ Northern Baikal pegmatite belt.
Zap.Vses.min.ob-va 91 no.5:537-549 '62. (MIRA 15:11)

1. Laboratoriya geologii dokembriya AN SSSR, Leningrad.
(Siberian Platform--Garnet) (Siberian Platform--Pegmatites)

SOKOLOV, Yu.M.

Third Congress of the All-Russian Society for the Conservation of Nature.
Biol. v shkole no.2:88-89 Mr-Apr '63. (MIRA 16:4)

1. Tsentral'nyy sovet Vserossiyskogo obshchestva okhrany prirody, Moskva.
(Conservation of natural resources—Congresses)

SOKOLOV, Y.I.; KURBANOV, B.I.; VAN YINVA, S.N.

Generalized criteria for the isolation of pegmatite provinces
(Gruzia, Bakel pegmatite belt). Trudy lab. geol. dokem.
no.19:313-318 1974 (NIRA 17:8)

SUMMARY: [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]

[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]

1. Akademiya nauk SSSR. Laboratoriya geologii i kembriya.

OBROCHEV, S.V., otv. red.; CHIRIKOV, E.R., kand. khim. nauk,
red.; NEYELOV, A.N., kand. geol.-miner. nauk, red.;
SOKOLOV, Yu.M., kand. geol.-miner. nauk, red.;
SHUKOLYUKOV, Yu.A., kand. khim. nauk, red.

[Absolute age of Pre-Cambrian rocks in the U.S.S.R.]
Absolютnyi vozrast dokembriiskikh porod SSSR. Moskva,
Nauka, 1965. 205 p. (MIRA 18:4)

1. Akademiya nauk SSSR. Laboratoriya geologii dokembriya.
2. Chlen-korrespondent AN SSSR (for Obrochev).

ACC NR: AR700220

SOURCE CODE: UR/0275/66/000/010/A001/A001

AUTHOR: Noskov, D. A.; Ponomareva, L. P.; Sokolov, Yu. M.

TITLE: Testing of certain types of cathodes in near vacuum conditions

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 10A2

REF SOURCE: Tr. Tomskogo in-ta radioelektron. i elektron. tekhn., no. 4, 1965, 90-94

TOPIC TAGS: cathode, tungsten cathode, betatron cathode, rhenium cathode, nickel cathode, lanthanum hexaboride cathode, ion bombardment, cathode emission

ABSTRACT: Three types of cathodes are analyzed: boride-lanthanite, oxide-thorium and a heater-baked cathode. Selection of the type is determined by its working conditions in a betatron injector. Requirements imposed on these cathodes are the following: high emission capacity; resistance to ion bombardment and contamination by residual gases; satisfactory operation under high voltage; mechanical strength and ease of operation; and long service life. Examination of

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UDC: 621.385.7

ACC NR: AR7002220

the influence of ion bombardment on lanthanite hexaboride cathodes has shown their stability to exceed considerably that of tungsten and rhenium. After the termination of the experiment, the boride-lanthanite cathode was kept in open air for 24 and 30 hours, after which its emission qualities were reexamined. The experiment showed that the cathodes fully recuperate their emission qualities and require no special activation. The strong heater current, which is the shortcoming of these cathodes, can be decreased by changing their dimensions or by indirect heating. The baked (impregnated) cathode, consisting of 70% nickel powder and 30% ternary carbonate, sintered with a nickel sublayer, is one of the cathodes most suitable for the betatron injector. Experiments show that the cathode completely recuperates its emission qualities after long exposure to the air and lengthy activation. Emission without additional activation decreases by a factor of two. Emission stability tests were conducted for 24 hours. At the end of the period, the emission was found to decrease by only 1%. The main qualities of this cathode are its high emission in pulsed conditions (30 amp/cm²) and its low working temperature (950 to 1200° K). The shortcoming of this cathode is the need to activate it after exposure to the open air, which makes its use rather difficult. The pressed oxide-thorium cathode is the strongest from the mechanical point of view. It is made of a sintered ceramic-metal mixture, pressed from

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ACC NR: AR7002220

thorium oxide with the addition of a refractory metal (molybdenum or tungsten). These cathodes are characterized by the absence of sparking, they are easily activated, show great resistance to deactivation by residual gases and ion bombardment, and have a very slow decay of emission during current takeoff. The capacity of the cathode to give a considerable emission in the pulse makes it possible for the cathode to work with pulses of long duration without a noticeable decay in the emission current, and also to work in large duty cycles. The influence of the degree of evacuation on the emission was tested. Readings were made of the emission characteristics at $8 \cdot 10^{-5}$ mm Hg and $2 \cdot 10^{-4}$ mm Hg. At $8 \cdot 10^{-5}$ mm Hg, the emission qualities of the cathode did not change, and at $2 \cdot 10^{-4}$ mm Hg, they changed insignificantly. The bibliography has 2 references. [Translation of abstract]

[GC]

SUB CODE: 09/

Card 3/3

SOKOLOV, Yu.N.

Temperature deformations of machine-tool body parts. Stan. 1 instr.
28 no.10:12-15 0 '57. (MLRA 10:11)
(Machine tools) (Deformations (Mechanics))

SOKOLOV, YU. N.

25670

Vliyanie privoda Na Ickazheniya indikatornoy diagrammy Izvestiya Tomskogo Politekhn
in-ta im. Kirova, T. LXVI, VYP. 2, 1948, s. 79-90

SO: LETOPIS' No. 34

SOKOLOV YU.N.

RYZHKOV, D.I.: SOKOLOV, Yu.N., inzhener, retsenzent; KLUSHIN, M.I.,
kandidat tekhnicheskikh nauk, dotsent, redaktor; POPOVA, S.M.,
tekhnicheskiiy redaktor

[Elimination of vibrations in high-speed metal cutting] Opyt
ustraneniia vibratsii pri skorostnom techenii metallov. Moskva,
Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry,
1954. 53 p. (MLRA 7:10)
(Machine tools--Vibration)

SOKOLOV. YU. N.

SOKOLOV, Yu. N. -- "Investigation and Calculation of Temperature Fields
And Temperature Deformations in Metal-Cutting Machine Tools." Min
High Education USSR. Moscow Machine Tool and Tool Institute imeni
I. V. Stalin. Moscow, 1955

So; Knizhnaya Letopis ' No 3, 1956

AID P - 4203

Subject : USSR/Engineering

Card 1/1 Pub. 103 - 4/20

Author : Sokolov, Yu. N.

Title : Determination of Oil-Film Temperature in Circular Guides of Boring and Turning Machines.

Periodical : Stan. 1 instr., 1, 17-19, Ja 1956

Abstract : The excessive temperature which develops in the oil-film of circular guides in boring and turning lathes can result in face-plate deformation and table scoring. He develops a method of mathematical formulae for exact determination of temperatures which occur in the guides, face plates and oil film. He also discusses the deformations resulting from excessive temperature and means for its prevention. Three drawings, 15 formulae, 2 graphs and 1 table.

Institution : None

Submitted : No date

SOV/121-58-10-9/25

AUTHOR: Sokolov, Yu.N.

TITLE: The Design of Plain Bearings for Heat Balance
(Teplovoy raschët podshipnikov skol'zheniya)

PERIODICAL: Stanki i Instrument, 1958, Nr 10, pp 24-27 (USSR)

ABSTRACT: A procedure is given for solving the heat balance equation of plain bearings as found in machine tools. The method can be used in the design stage and takes account of the conditions of operation and the design dimensions of the bearing and its surrounding components. The heat formed by friction is computed with the help of the mean friction coefficient found from a formula due to P.I.Orlov which contains the viscosity of the oil, the rpm, the pressure, the diameter/length ratio and the clearance/diameter ratio. The heat is carried away through the journal pin, the bearing liner and the oil. Each of the three contributions is separately expressed by appropriate formulae. The heat carried through the shaft divides into the heat conducted away through the shaft itself and the heat returned to the oil in the unloaded zone.

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SOV/121-58-10-9/25

The Design of Plain Bearings for Heat Balance

which are computed separately. Values of the heat transfer coefficient from a round shaft to the surrounding medium are plotted in fig.2 against the surface speed. To find the temperature drop between the shaft and the oil a heat transfer problem is considered, wherein the layer of oil is taken as a flat thin stratum of infinite dimensions, a heat source is acting inside the oil and the heat transfer to the walls is by convection only. Equation 17 yields a solution of this problem and is applied to the bearing problem. Finally, the heat balance equation is transformed into equation 24 which expresses the oil temperature. The method here presented was examined by experimental measurements in a special test rig. Table 3 lists some comparisons of these measurements with the computed quantities. A fairly close agreement is observed.

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SOV/121-58-10 9/25

The Design of Plain Bearings for Heat Balance

It is also shown that the mean oil temperature in the working region of the bearing is always above the shaft and liner temperatures. There are 3 illustrations, including 2 graphs and 3 tables.

Card 3/3

SOKOLOV, Yu.N.

Hydrodynamic calculation of sliding bearings with self-adjusting
multiple bushings. Stan.i instr. 32 no.11:25-27 N '61.
(MIRA 14:10)

(Bearings (Machinery))

SOKOLOV, Yu.N.

Effect of the machine-shop temperature on the precision of
dimensions and shape of parts. Stan.i instr. 31 no.2:16-19
F '60. (MIRA 13:5)
(Metal cutting)

SOKOLOV, Yu.N.; AYZENSHTAT, L.I.

Methods and devices for investigating spindle units of machine
tools. Stan.i instr. 33 no.11:14-17 N '62. (MIRA 15:11)
(Spindles (Machine tools)--Testing)

S/121/63/000/001/001/014
A004/A126

AUTHOR: Sokolov, Yu.N.

TITLE: Spindle slide bearings of precision machine tools

PERIODICAL: Stanki i instrument, no. 1, 1963, 3 - 7

TEXT: The author points out the advantages of using slide bearings in precision machine tools in comparison with antifriction bearings and divides the former into two groups: 1) slide bearings with one bearing oil wedge; 2) slide bearings with several bearing oil wedges. He enumerates the design features of the spindle slide bearings of the UFB-500A machine tool of Messrs. Fortuna, of the UND-2 relieving lathe of Messrs. Reinecker, of the machine tools of Messrs. Landis ("Lendis"), Messrs. MSO, and emphasizes that slide bearings with one bearing oil wedge only are inferior to those having several bearing oil wedges as regards rigidity, spindle stability over the whole speed and load ranges, possibility of adjusting the clearance without distorting the working areas and lower temperature due to better heat-removal conditions. A description is given of the "Makenzen" type bearing with tapered outer surface, the multi-wedge bearing

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Spindle slide bearings of precision machine tools

S/121/63/000/001/001/014
A004/A126

of the English firm Glacier ("Glas'e") and the multi-wedge "Philmatic" ("Fil'ma-tik") bearing with sectional bushes used in Cincinnati machine tools. The author then describes the design particulars of the new J10H-34 (LON-34) spindle bearing developed by ENIMS. A detailed table gives the basic dimensions, bearing capacity and the rigidity of these hydrodynamic fluid-friction bearings, and it is stated that the LON-34 spindle bearing is superior even to the Philmatic bearing concerning operational characteristics and bearing rigidity. There are 13 figures and 1 table.

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Card 2/2

SOKOLOV, Yu.N.; FIGATNER, A.M.

Selection of basic parameters of spindle units for precision
machine tools. Stan. i instr. 34 no.8:3-6 Ag '63. (MIRA 16:10)

L 36223-65 EWT(d)/EWT(m)/EPF(o)/EWA(d)/EWP(v)/EPR/T/EWP(k)/EWP(h)/EWP(l)
 Pf-4/Pr-4/Ps-4 DJ
 ACCESSION NR: AP5010288 UR/0286/64/000/014/0070/0070

AUTHOR: Sokolov, Yu. N.

TITLE: Slider-type (friction) bearing. Class 47, No. 164173

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1964, 70

TOPIC TAGS: antifriction bearing, machine tool

Translation: A slider-type (friction) bearing principally for precision metalworking machine tools. The bearing consists of a housing and self-adjusting bushings which are made in the form of sectors and are mounted within the housing on small legs. In order to simplify adjustment of clearances and to improve operating conditions, the housing is made in the form of a ring with an arched cross section. The peak of the arch is turned toward the inside of the ring and there are grooves in the ring at the peak of the arch between the small leg-mounts. The leg-supports are made all in one piece with the housing and the corresponding sectors. Orig. art. has 1 figure.

ASSOCIATION: Eksperimental'nyy nauchno-issledovatel'skiy institut metallorazhushchikh stankov (Experimental Scientific Research Institute of Metal-Cutting Machine Tools)

Card 1/1

W. W. W. N.

Hydrodynamic spindle bearing for precision machine tools. (Trans. ASME, Ser. B, Vol. 87, No. 5, 1965, pp. 1025-28. 1965)